Initial Assessment of the Impacts of the Proposed Bush to I-12 Highway
To the Prescribed Fire Program at
Mossy Hill Mitigation Bank

By The Nature Conservancy – Louisiana Field Office

This is a response to the request for information on the effects of the I-12 to Bush highway project on the Mossy Hill Mitigation Bank, more specifically the effects of proposed routes Q and J on the prescribed fire program at Mossy Hill Mitigation Bank. This is an initial response and further observation before, during, and after the construction of the highway will be needed to fully understand all the impacts.

Mossy Hill Mitigation Bank is approximately a 2200 acre mitigation bank lying just south of HWY 435 in Talisheek, Louisiana. Mossy Hill is located in the Bayou Lacombe Basin, specifically within a +/- 5600 acre area which drains into Bayou Lacombe. Mossy Hill was established in 2009 and is in the initial stages of development. During this period, the ability to be flexible with management practices is crucial to the overall condition of the mitigation bank. We believe the I-12 to Bush highway project would have a lasting effect on management flexibility, access, hydrology, and fire management well into the foreseeable future. Some of these impacts will be difficult to quantify.

Fire Management and Smoke management

Fire is the primary ecological process that shapes the longleaf pine ecosystem. Fire is a necessary management tool for both establishing a mitigation bank and maintaining a longleaf pine ecosystem. The timing of a burn and the ability to adjust the intensity is crucial when it comes to controlling brush and stimulating sought after species to grow. Roadways limit the ability of burn managers to use fire. The proposed routes Q and J would isolate 335 acres in the north and 115 acres in the south from the remainder of the bank. These two segments, totaling 450 acres, lie east of the proposed routes. Another 835 acres to the west of the roadway would also be directly impacted by the highway. The remaining property could be directly and/or indirectly impacted as well.

Smoke management is critical when implementing a prescribed burn. Smoke sensitive areas such as roads, hospitals, daycares, etc., must be avoided in order to lower the risk of smoke-related incidents that can arise from prescribed fire. The following are smoke and fire related impacts of the new highway.

- The proposed routes would require smaller burn units. This would be necessary to limit the amount of smoke and duration of fire on the ground. The division of the area into smaller burn units would increase the number of burns and burn days needed within a targeted area per year. More burns per year would create greater cost to the bank operator as well as increasing risk of incidents from prescribed burns.
- To divide current units into smaller units, additional fire lines would need to be constructed. These newly constructed fire lines would directly and indirectly affect the Mossy Hill Mitigation

Bank in several ways. They would directly impact the number of acres available for mitigation as well as indirectly affect wildlife habitat.

- Area of reduced Management
  - There could be a need of 13,602 ft of newly constructed fire lines along the roadway, as well as 3,961 ft of newly established interior fire lines. The total length of these fire lines would be 17,563 ft. With an average fire line width of 10 ft, 4.0 acres would be directly lost or degraded due to fire line establishment.
  - Additional firebreaks reduce the effectiveness of the burns in several ways. One is called the "edge effect." The first ten feet or so off a firebreak never gets good effect regardless of whether it's a head fire, backing fire or flanking fire. This is partly because of the cool firebreak adjacent, decreased amount of time exposed to flame, and because the fuels are not preheated by approaching flames. When a new firebreak is installed on the interior of a unit, two new "edges" are created on either side of the line so the interior line length must be counted twice. The close proximity to the fire line, within 10 feet of the fire line, doesn't allow a sufficient amount of time, heat, or flame for the fire to effectively control brush within this zone. There will be 13,602 ft of newly established perimeter fire lines (along roadway), with 10 ft of edge effect, for a total of 3.1 acres. There would 3,961 ft of newly established interior fire lines, with 20 ft of edge, for a total of 1.8 acres. There would be a total of 4.9 acres affected by the edge effect.
  - There would be a total of 8.9 acres affected by new fire line establishment.
- Wildlife Habitat
  - Although it is difficult to quantify the effects these new fire lines would have on wildlife there are a few things we do know. These fire lines would reduce the native woody over story and understory species in the fire line as well as the edge affected areas. This would essentially change the overall structure of these areas. This effect would be most pronounced in the slash pine/pond cypress and bayhead areas. These two areas are naturally more heavily stocked with native woody species than the longleaf pine savanna areas. Some rare or sensitive species may be impacted, particularly woody species.

- The number of suitable days under which burn units could be burned would be reduced. This is because the areas lying east of the roadway could only be burned when a wind with a west component (southwest, west, northwest) is available to prevent smoke from crossing the highway. The areas lying west of the roadway could only be burned when a wind with an east (southeast, east, northeast) component is available to prevent smoke from crossing the highway. This would lead to fewer available days to burn and could reduce total acres burned in a season.
- The number of days suitable for burning would decrease because burning would not be conducted when fog is in the forecast.

- The reduction in burn frequency and/or intensity would require the use of other measures such as mechanical and/or chemical treatment of brush. This would increase total cost of management on a per acre basis.
- The increased complexity of conducting prescribed fires would require more experienced contractors and larger burn crews, thus increasing the cost of burning.
- The time spent on individual burns would increase substantially. The time spent on mopping up after a burn would increase due to the proximity to a major road.
- Burning near this major highway may require additional safety precautions to mitigate the risks of accidents occurring on the roads. A few such safety precautions could include the establishment of permanent prescribed fire warning signs or the contracting of sheriffs or other official personnel to patrol the road during a prescribed fire.
- Rubber necking as motorists pass during burns could increase the risk of accidents.
- As population growth and density increase around the roadway, more developed, smoke-sensitive areas would become established. This would lead to further problems and higher costs for prescribed burning.
- There would be no access to a 450 acre piece of the property if the proposed highway is built. These 450 acres would essentially be cut off from the remaining property and a new road would need to be established to maintain access. A new road could be constructed using an existing 60 ft right-of-way. With an average road width of 30 ft and the length of 3296 ft, it would require 2.3 acres to establish the new road through existing pine flatwoods habitat.
- There would be less acreage to manage. The proposed routes require 250 ft of right away, of which 200 is owned by Weyerhaeuser. Therefore 50 ft will be taken out of the Mossy Hill Mitigation Bank for the length of the right-of-way. This would equal to approximately 8 acres.

Other Impacts

- Hydrology
    - If not addressed during construction of the highway, sheet flow of water under the roadway would be impacted, as well as the flow of natural drains that cross the road. Roadways will need to be elevated, and/or culverts will need to be installed as appropriate to maintain natural water movement.
    - Increased population growth and development facilitated by the new highway would alter drainage regimes by increasing runoff and drainage from developed areas into the Mossy Hill area. This could lead to higher floods along drains that could impact the composition and structure of adjacent pine flatwood wetland habitats.
    - Contaminants from the roadway and developed areas, in the form of oil, grease, fertilizer, pesticides and other pollution, would increase due to runoff into the area.
- Wildlife
    - Wildlife movement would be impeded by the road and any fencing installed to limit public access.
    - Wildlife mortality would increase with accidents involving cars.
    - Noise could impact mating and other behaviors.

- Habitat could be changed by the reduction of fire frequency and effects on hydrology.
- Roadway would act as corridor for invasive species to enter property. This would increase treatment costs on property.

As stated earlier, further review of the project will be needed to fully understand and quantify the potential impacts the I-12 to Bush highway project would have on the Mossy Hill Mitigation Bank.